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Re: Application No.: **09/692,346** Attorney Docket No: **AUS9-2000-0632-US1**	
Date: Monday, February 07, 2005	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Frazier et al.**

Serial No.: **09/692,346**

Filed: **October 19, 2000**

For: **Method and Apparatus for Reliably Choosing a Master Network Manager During Initialization of a Network Computing System**

35525

PATENT TRADEMARK OFFICE CUSTOMER NUMBER

§ Group Art Unit: **2153**

§

§ Examiner: **Edelman, Bradley E.**

§

§ Attorney Docket No.: **AUS9-2000-0632-US1**

§

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By: Amelia C. Turner

Amelia C. Turner

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- Appeal Brief (37 C.F.R. 41.37).

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Respectfully submitted,

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Docket No. AUS9-2000-0632-US1 *PATENT*

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Examiner: **Edelman, Bradley E.**

Commissioner for Patents
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By: Amelia C. Turner

APPEAL BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Notice of Appeal, filed in this case on December 7, 2004.

The fees required under § 41.20(B)(2), and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

REAL PARTY IN INTEREST

The real party in interest in this appeal is the following party: Internal Business Machines Corporation

RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interferences.

STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 1-28

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: NONE
2. Claims withdrawn from consideration but not canceled: NONE
3. Claims pending: 1-28
4. Claims allowed: NONE
5. Claims rejected: 1-28
6. Claims objected to: NONE

C. CLAIMS ON APPEAL

The claims on appeal are: 1-28

STATUS OF AMENDMENTS

There are no amendments after final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

Independent claims 1, 9, 24, and 25:

The presently claimed invention provides a method, data processing system, network computing system, apparatus, and computer program product for selecting a subnet manager. The present invention sends requests from a first node that contains a subnet manager to the network computing system to discover other nodes within the network computing system. See specification, page 23, lines 17-20; page 24, lines 12-15; page 25, line 26, to page 26, line 12. The present invention receives a response to one of the discovery requests from a second node that has a second priority and compares the second priority to the first priority. If the second priority is higher than the first priority, the present invention shifts the first subnet manager to a standby mode. If discovery is complete and no response is received from a node with subnet manager having a higher priority than the first priority, then the first subnet manager is shifted to a master mode. See specification, page 26, line 23, to page 27, line 9.

The means recited in independent claim 16, as well as dependent claims 17-27, may be data processing hardware within end nodes **702-710**, as described in the specification at page 24, line 27, to page 25, line 12, operating under control of software performing the steps described in the specification at page 25, line 13, to page 29, line 8, or equivalent. A person having ordinary skill in the art would be able to derive computer instructions on a computer readable medium given **Figure 8** and the corresponding description at page 25, line 13, to page 29, line 8, without undue experimentation.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection on appeal are as follows:

Claims 1-28 are rejected under 35 U.S.C. § 102(c) as being allegedly anticipated by *Fairchild et al.* (U.S. Patent No. 6,343,320).

ARGUMENT

I. 35 U.S.C. § 102, Alleged Anticipation of Claims 1-28

The Final Office Action rejects claims 1-28 under 35 U.S.C. § 102(c) as being anticipated by *Fairchild et al.* (U.S. Patent No. 6,343,320). This rejection is respectfully traversed.

Fairchild teaches a network computing system including a plurality of subnets. Each subnet includes a management server and a plurality of network participating devices (NPD). The management server sends a beacon packet to other subnets to notify other subnet management servers of changes. See *Fairchild*, col. 13, lines 40-42. The beacon packets broadcast information about a NPD to every other NPD in the subnet. They send information from the broadcasting node, but do not cause any information to be brought back. The "master" node in *Fairchild* simply collects information and sends the information to a management server. See *Fairchild*, col. 11, lines 56-59; col. 13, lines 12-19; col. 14, lines 20-22. Also, in *Fairchild*, the node with the lowest "INTERVAL VALUE" is chosen as the "master" node. See *Fairchild*, col. 11, lines 56-59; col. 14, lines 20-22 and 60-65; col. 26, lines 30-54; col. 27, lines 3-5.

In contradistinction, the present invention allows a node to discover other nodes to send requests to other nodes and receive a response from at least one other node. Each node has a priority value and if a given node that has a subnet manager discovers another node that has a subnet manager and a higher priority value, then the given node is switched to a standby mode. Claim 1, for example, recites:

> 1. A method in a node within network computing system for selecting a master subnet manager, the method comprising:
>
> sending requests from a first node to the network computing system to discover other nodes within the network computing system, wherein the first node contains a first subnet manager having a first priority;
>
> receiving a response to one of the requests from a second node within the network computing system, wherein the second node within the network computing system contains a second subnet manager having a second priority;
>
> comparing the second priority to the first priority;
>
> shifting the first subnet manager to a standby mode if the second priority is higher than the first priority; and
>
> shifting the first subnet manager to a master mode if no response is received from any node containing a subnet manager having a priority higher than the first priority and if discovery of the other nodes within the network computing system is complete.

Fairchild does not teach or fairly suggest the claimed features, particularly as recited, in combination, in claim 1.

More particularly, with respect to the individual claim limitations, *Fairchild* does not teach or suggest receiving a response to one of the requests from a second node within the network computing system, as recited in claim 1. The Final Office Action alleges that *Fairchild* teaches this feature at col. 11, lines 56-59; col. 13, lines 12-19; col. 14, lines 20-22 and 60-65. The cited portions of *Fairchild* are as follows:

> One NPD 302 in each group operates as an ASC group master to transfer management and status information of all the NPDs 302 in a given group to a management server, such as the management server 102.

Fairchild, col. 11, lines 56-59.

> The monitor module 414 provides management information from other NPDs 302 of a group to the CST 404, such as any of the groups 320, 322 or 324. The monitor module 414 also detects registration beacon packets, or type 6 packets, and builds or otherwise adds appropriate entries to a corresponding management server table (MST) 405 that includes an entry for each registered management server. It is noted that a different MST 405 is provided for each subnet to which the NPD 302 is coupled or participating.

Fairchild, col. 13, lines 12-20.

> The TYPE field is set to a value of 1 if the corresponding NPD is able to serve as ASC group master, but otherwise the TYPE field is set to 2.

Fairchild, col. 14, lines 20-22.

> A type 5 packet is identical to packet types 3 and 4 and is sent by the ASC group master to request that each NPD 302 in the group send a subsequent packet including its NPDNAME. Each NPD 302 responding to a type 5 packet sends either type 3 or 4 rather than the normal types 1 or 2, respectively.

Fairchild, col. 14, lines 60-65. The above portions teach that a monitor module detects beacon packets, that a master transfers information to a management server, and that a TYPE field is used to identify a group master. However, *Fairchild* does not teach or suggest receiving a response to one of the requests from a second node within the network computing system, as

recited in claim 1. The Final Office Action proffers no analysis as to why broadcast beacon packets are somehow equivalent to discovery requests to which responses are received. Appellants submit that the beacon packets of *Fairchild* send information from the broadcasting node, but do not cause any information to be brought back. Therefore, *Fairchild* does not teach each and every claim limitation and, thus, not anticipate claim 1.

Furthermore, *Fairchild* does not teach or suggest comparing a second priority of a second node to a first priority of a first node, shifting the first subnet manager to a standby mode if the second priority is higher than the first priority, and shifting the first subnet manager to a master mode if discovery is complete and no response is received from a node with subnet manager having a higher priority than the first priority, as recited in claim 1, for example. The Final Office Action alleges that this is taught at col. 14, lines 60-65; col. 26, lines 34-42; col. 27, lines 3-5. The cited portions of *Fairchild* are as shown above and as follows:

> In one embodiment, the NPD 302 scans the entries in the CST 404 to determine whether it is master by determining if it has the lowest INTERVAL value of all NPDs 302 in the same group that are also active, such having their CSTATE variable set to 1 indicating normal operation, and having their CANSERVEASMASTER variables set to 1 indicating that they can serve as master. In other words, the NPD 302 in any given group that has the lowest INTERVAL VALUE, that is active and that has determined that it can serve as master, is the ASC group master for that group.

Fairchild, col. 26, lines 34-42.

> Also, if a new NPD 302 with capabilities to be master is powered up in a given group and has the lowest INTERVAL value, it will eventually take over as new master and the old master relinquishes master duties after recognizing the new NPD 302 as the ASC group master.

Fairchild, col. 26, line 67, to col. 27, line 5. The above portions teach that a master is chosen based on a lowest "INTERVAL" value. However, a "master" node of *Fairchild* simply collects information and sends the information to a management server. A master node of *Fairchild* is not equivalent to a subnet manager.

The present specification states:

> The subnet manager is an entity attached to a subnet that is responsible for configuring and managing switches, routers, and channel adapters.

Specification, page 26, lines 4-6. A master node of *Fairchild* does no configuration or management. Only a management server in *Fairchild* performs such functions. However, a management server of *Fairchild* does not switch between a standby and master state. Therefore, *Fairchild* simply fails to teach a first node that contains a first subnet manager, shifting the first subnet manager to a standby mode if the second priority is higher than the first priority, and shifting the first subnet manager to a master mode if no response is received from any node containing a subnet manager having a priority higher than the first priority and if discovery of the other nodes within the network computing system is complete, as recited in claim 1 for example.

The applied reference fails to teach or suggest each and every claim limitation; therefore, *Fairchild* does not anticipate claim 1. Independent claims 13, 15, 16, and 28 recite subject matter addressed above with respect to claim 1 and are allowable for similar reasons. Since claims 2-12, 14, and 17-27 depend from claims 1, 13, and 16, the same distinctions between *Fairchild* and the invention recited in claims 1, 13, and 16 apply for these claims. Additionally, claims 2-12, 14, and 17-27 recite other additional combinations of features not suggested by the reference.

CONCLUSION

In view of the above, Appellants respectfully submit that claims 1-28 are allowable over the cited prior art and that the application is in condition for allowance. Accordingly, Appellants respectfully request the Board of Patent Appeals and Interferences to not sustain the rejections set forth in the Final Office Action.

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CLAIMS APPENDIX

The text of the claims involved in the appeal reads:

1. A method in a node within network computing system for selecting a master subnet manager, the method comprising:

sending requests from a first node to the network computing system to discover other nodes within the network computing system, wherein the first node contains a first subnet manager having a first priority;

receiving a response to one of the requests from a second node within the network computing system, wherein the second node within the network computing system contains a second subnet manager having a second priority;

comparing the second priority to the first priority;

shifting the first subnet manager to a standby mode if the second priority is higher than the first priority; and

shifting the first subnet manager to a master mode if no response is received from any node containing a subnet manager having a priority higher than the first priority and if discovery of the other nodes within the network computing system is complete.

2. The method of claim 1, wherein the first node is associated with a first unique value and wherein the second node is associated with a second unique value, the method further comprising:

comparing the first unique value to the second unique value if the first priority is equal to the second priority; and

shifting the first subnet manager to a standby mode if the first unique value identify is less than the second unique value.

3. The method of claim 2, wherein the first unique value and the second unique value are globally unique identifiers.

4. The method of claim 1, wherein the network computing system is a system area network.

5. The method of claim 1, wherein the requests are system management packets.

6. The method of claim 1 further comprising:

polling a master subnet manager in the network computing system in response to the first subnet manager shifting to a standby mode.

7. The method of claim 6, wherein the polling occurs periodically.

8. The method of claim 6 further comprising:

reinitiating the steps of sending, receiving, comparing, shifting to a standby mode, and shifting to a master mode if a response to polling of the master subnet manager is absent.

9. The method of claim 8, wherein the response to polling of the master subnet manager is considered absent if a response is not received from the master subnet manager within a selected

period of time and commensurate to the poll operation not completing after the poll operation has been retried a predetermined number of times.

10. The method of claim 1, wherein the steps of sending, receiving, comparing, shifting to a standby mode, and shifting to a master mode are initiated prior to initialization of an operating system for the first node.

11. The method of claim 1, further comprising:

shifting the first subnet manager from master mode into standby mode in response to receiving a message to handover mastership of the network computing system.

12. The method of claim 1, further comprising:

shifting the first subnet manager to a non-active mode from the standby mode in response to receiving a message to shift to non-active mode from a master subnet manager.

13. A data processing system in a first node comprising:

a bus system;

a host channel adapter connected to the bus system, wherein the host channel adapter provides a communications link to a network computing system;

a memory including a set of instructions connected to the bus system; and

a processing unit connected to the bus system, wherein the processing unit executes the set of instructions to send requests from a first node to the network computing system to discover other nodes within the network computing system, wherein the first node contains a first subnet

manager having a first priority; receive a response to one of the requests from a second node within the network computing system, wherein the second node within the network computing system contains a second subnet manager having a second priority; compare the second priority to the first priority; shift the first subnet manager to a standby mode if the second priority is higher than the first priority; and shift the first subnet manager to a master mode if no response is received from any node containing a subnet manager having a priority higher than the first priority and if discovery of the other nodes within the network computing system is complete.

14. The data processing system of claim 13, wherein the first node is associated with a first globally unique identification and wherein the second node is associated with a second globally unique identification and wherein if the first node has an equal priority as compared to a highest priority received from any other node in the network computing system, the processing unit compares the first globally unique identification to the second globally unique identification to determine whether to shift into a master mode.

15. A network computing system comprising:

fabric, wherein the fabric facilitates transfer of data; and

a plurality of nodes connected to the fabric, wherein a first node within the plurality of nodes contains a first subnet manager that has a first priority and sends requests to discover other nodes within the network computing system, receives a response to one of the requests from a second node containing a second subnet manager that has a second priority, comparing the second priority to the first priority, shifts the first subnet manager to a standby mode if the second priority is higher than the first priority node, and shifts the first subnet manager to a

master mode if discovery of the other nodes within the network computing system is complete and a response containing a subnet manager having a priority higher than the first priority the node is absent in responses received by the node.

16. An apparatus for selecting a master subnet manager, the apparatus comprising:

sending means for sending requests from a first node to the network computing system to discover other nodes within the network computing system, wherein the first node contains a first subnet manager having a first priority;

receipt means for receiving a response to one of the requests from a second node within the network computing system, wherein the second node within the network computing system contains a second subnet manager having a second priority;

comparison means for comparing the second priority to the first priority;

first shifting means for shifting the first subnet manager to a standby mode if the second priority is higher than the first priority; and

second shifting means for shifting the first subnet manager to a master mode if no response is received from any node containing a subnet manager having a priority higher than the first priority is and if discovery of the other nodes within the network computing system is complete.

17. The network computing system of claim 16, wherein the first node is associated with a first unique value and wherein the second node is associated with a second unique value, the method further comprising:

comparing means for comparing the first unique value to the second unique value if the first priority is equal to the second priority; and

third shifting means for shifting the first subnet manager to a standby mode if the first unique value identify is less than the second unique value.

18. The network computing system of claim 17, wherein the first unique value and the second unique value are globally unique identifiers.

19. The network computing system of claim 16, wherein the network computing system is a system area network.

20. The network computing system of claim 16, wherein the requests are system management packets.

21. The network computing system of claim 16 further comprising:

polling means for polling a master subnet manager in the network computing system in response to the first node shifting to a standby mode.

22. The network computing system of claim 21, wherein the polling occurs periodically.

23. The network computing system of claim 21 further comprising:

reinitiating means for reinitiating the sending means, receipt means, comparison means, first shifting means, and second shifting means if a response to polling of the master is absent.

24. The network computing system of claim 23, wherein the response to polling of the master subnet manager is considered absent if a response is not received from the master subnet manager within a selected period of time and commensurate to the poll operation not completing after the poll operation has been retried a predetermined number of times.

25. The network computing system of claim 16, wherein the sending means, receipt means, comparison means, first shifting means, and second shifting means are initiated prior to initialization of an operating system for the first node.

26. The network computing system of claim 16, further comprising:

third shifting means for shifting the first subnet manager from master mode into standby mode in response to receiving a message to handover mastership of the network computing system.

27. The network computing system of claim 16, further comprising:

third shifting means for shifting the first subnet manager to non-active mode from standby mode in response to receiving a message to shift to non-active mode from a master subnet manager.

28. A computer program product in a computer readable medium for use in a first node within network computing system for selecting a master subnet manager, the computer program product comprising:

first instructions for sending requests from the first node to the network computing system to discover other nodes within the network computing system, wherein the first node contains a first subnet manager having a first priority;

second instructions for receiving a response to one of the requests from a second node within the network computing system, wherein the second node contains a second subnet manager having a second priority;

third instructions for comparing the second priority to the first priority;

fourth instructions for shifting the first subnet manager to a standby mode if the second priority is higher than the first priority; and

fifth instructions for shifting the first subnet manager to a master mode if no response is received from any node containing a subnet manager having a priority higher than the first priority and if discovery of the other nodes within the network computing system is complete.

EVIDENCE APPENDIX

There is no evidence to be presented.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.